

1295644

# PATENT SPECIFICATION

(11) 1295644

## DRAWINGS ATTACHED

(21) Application No. 54815/69 (22) Filed 10 Nov. 1969  
(21) Application No. 7589/70 (22) Filed 17 Feb. 1970  
(23) Complete Specification filed 19 April 1971  
(45) Complete Specification published 8 Nov. 1972  
(51) International Classification A63B 69/36//E05F 1/10  
(52) Index at acceptance

A6D 13A  
E2M 11F1 12EX



## (54) GOLF SIMULATING OR PRACTISING APPARATUS

(71) I, THOMAS HARRISON, a British Subject, of 27 Chesworth Crescent, Horsham, Sussex, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an apparatus for use in practising or simulating the game of golf.

The invention aims at an apparatus which will permit the game of golf to be practised or simulated at a localised position away from a golf course, e.g. on a garden lawn or even on a carpet in the house making use of the conventional clubs and preferably in conjunction with means for simulating the same hazards as are encountered in playing the game on an ordinary course.

20 The apparatus according to this invention comprises a captive ball mounted for limited movement in flight when driven by a club, means displaceable by the impact of the driven ball thereagainst to an extent dependent upon 25 the force of impact of the ball thereon and upon the location of impact determined by the flight of the ball, means responsive to such displacement to indicate the distance the ball, if free, would have travelled, and a member 30 which is displaceably mounted so that, upon impact by a club in its followthrough, it is moved to take up a direction in which the ball, if free, would have travelled. Such member may co-operate with a dial, scale or the like 35 to indicate the direction in which the ball, if free, would have travelled.

The first said means may comprise a pivoted flap normally biased to return to a given position and adapted to be displaced about its 40 pivot to an extent determined by the force of the impact thereon of the driven ball and the location of impact according to the flight of the ball.

45 The flight in turn depends upon the loft of the club head and the apparatus responds efficiently irrespective to the loft of the club used. In the game of golf a high-lofted club will not send a ball as far as a low-lofted

club if the ball is struck with the same force, and when using the present apparatus, a low-lofted club, such as a conventional driver club, will strike the flap at a distance from the pivot of the flap greater than that at which it will be struck by a high-lofted club such as a No. 6 iron, and thus the angular displacement of the flap is related to the club used, i.e., the distance which the ball would have travelled if free is recorded in accordance with the club used. The appliance thus closely simulates an actual game of golf since the player can use the same clubs as he would use on a golf course and obtain an indication related to the club selected.

The angular movement of the flap in dependence upon the strength and location of impact can be registered on a dial or scaled segment by a pointer in terms of the distance the ball would have travelled had it been free. The flap is preferably suspended from a top horizontal hinge axis and can be located by a torsion or other appropriate spring means which normally maintains the flap up to a fixed stop. The pointer may be moved by a cord or other flexible tension member in response to angular displacement of the flap.

To enable the ball to rise in flight from its stationary position, it may be carried at the end of a rod which is appropriately pivoted for this purpose at a point of captivity laterally of the line of play. The pivot point may however be adjustable as may be a support upon which the rod, near the pivot, can rest.

A tray or trays may be provided containing material simulating a rough or a smooth surface, e.g., shorter or longer grass, or containing sand, and different hazards may be shown on a chart e.g., in different types of shading or colours. The tray or any selected tray can be placed under the ball before striking it.

The member responsive to the follow-through of the club may comprise a rod, preferably one partially clothed by a sleeve of a resilient plastics, rubber or other suitable material, the rod being so pivoted that it can move from side to side in response to and conform to the direction of impact of the club

50

55

60

65

70

75

80

85

90

95

on the resilient sleeve. The rod may act as a pointer for co-operating with a scaled segment to form the direction indicator. The rod may extend forwardly towards the captive ball from a bottom pivot and be movable through approximately  $135^{\circ}$  to come to rest with the pointer in readable relation with the segment. The sleeve-covered portion of the rod may come on a deadening support such as cushion of sand, e.g., in a bag, and the rod, where it projects at its outer end beyond the sleeve, may have a spike which will penetrate or embed itself into a penetrable stop adjacent the segment, e.g., a stop formed by a layer or bed of cork.

The position at which the ball, if free, would come to rest as indicated by the distance and direction indicators can be noted on the chart with the aid of a transparent plotter marked in angles and distances from a point which can be located on the chart at the position the ball occupied before the stroke was made. When a position has been located this can be fixed by a magnetic marker and the plotter withdrawn. The chart may be in the form of a strip that can be wound from a draw-off-roller onto a take-up roller.

The apparatus can be set up on or near a lawn provided with a normal size golf hole and the lawn used as a putting green when the position of the ball as indicated by the chart is considered near enough to the hole to be putted. Alternatively the apparatus could be used inside, e.g., in the home, and a holed member provided, preferably for location on a carpet, and designed so that the ball can be readily driven from a predetermined position on the carpet into the hole.

One embodiment of the invention are illustrated by way of example in the accompanying drawings, in which;

Fig. 1 is a plan view and Fig. 2 a side elevation of the main part of the apparatus. Fig. 3, 3a and 3b, show different trays of material for simulating the surface conditions at different parts of a course. Fig. 4 is a plan view and Fig. 5 an end elevation of a chart and means for exposing it between draw-off and take-up spools. Fig. 6 is a view of a transparent plotted member for use in transferring the information gathered by the indicators to the chart. Fig. 7 shows hazards of the course. Fig. 8 shows a magnetic marker.

Fig. 9 shows a plan view of a modified arrangement and Fig. 10 a side elevation thereof.

Fig. 11 is a cross-sectional view through the flap shown in Figs. 9 and 10 and showing further pad arrangements hereinafter described.

Fig. 12 is a detail view showing the arrangement of the captive ball and Fig. 13 is a sectional view showing the direction indicator in more detail.

Fig. 14 is a view from the back of the flap.

Fig. 11 to 14 are shown on an enlarged scale. Referring more particularly to Figs. 1 and 2, 1 indicates a captive golf ball, or a ball simulating a golf ball and of the same weight. The ball is carried at the end of a rod 2 which is pivoted at 3 so that the rod can swing out of the line of play and rise to compare to the flight of the ball. The ball can be supported at an appropriate height and preferably interchangeable trays or supports for the ball are provided so that the surface conditions at any position on the course can be simulated.

When the ball is struck by a golf club it swings round the pivot 3 and strikes a flap 4 suspended in a frame 5 by a top hinge 6. The flap is faced with balsa wood, hard rubber or some other suitable resilient material to absorb the shock of impact. The hinge 6 is loaded by a strong spring 7, e.g., torsion spring, which keeps the flap 4 against a stop 8. The spring 7 opposes opening of the flap 4 in response to the force imparted thereto by the moving ball 1 when the ball strikes the flap. To show the angular displacement of the flap a pointer 9 is displaceable by a cord 10 or the like which in turn is pulled by the opening movement of the flap. The pointer co-operates with a dial 11. Inasmuch as the angular displacement of the flap depends upon the force applied thereto by the ball, the indicator 9, 11 will approximately register the strength of the shot in terms of the distance which the ball would have travelled in the absence of obstruction, the spring force being appropriately chosen.

The type of club being used controls the point of impact of the ball on the flap. A club with a small 'loft' face e.g., a driver, will cause the captive ball to strike the flap near the bottom thereof and give a high reading on the indicator 9, 11 for a given impact of the ball on the flap. A club with a more marked 'loft' face, e.g., a No. 6 iron, will strike the flap higher up and give a lower reading on the indicator 9, 11. If both clubs are swung with exactly the same force the distance recorded on the distance indicator will be more for the driver than for the iron, as would be the case if these clubs were used on a golf course in the normal way. Other clubs will automatically indicate their relevant distances if they are from a matched set.

The ball carrying rod 2 is freely mounted to turn and rise. It may be adjustable by screwing a retaining nut up or down and adjustment may be carried out in manufacture to obtain a desired relationship as between the effect of different clubs, e.g., a No. 6 iron as against a driver when hit with the same force.

As previously stated the approximate distance the ball if unrestrained would travel is obtained from the dial 11 of the distance

70

75

80

85

90

95

100

105

110

115

120

125

130

indicator, but provision is also made for indicating the approximate direction the ball would have travelled in the absence of restraint. For this purpose a metal rod 12 is looped or eyeleted at one end to pivot it on an axle 13. The rod is partially clothed by a sleeve 14 of plastics material. The clothed rod is thus free for movement to either side and can travel through approximately  $135^\circ$  from the position shown in Fig. 2 to the position shown in Fig. 1. The unclothed end of the rod is provided with a spike 15 and the rod may have a plastics rear flight, such as is used in a dart, for stabilizing the rod when it is displaced by the club. During the swing of the club and after the ball has cleared the line of play, the club, e.g., the head thereof, in the follow-through, will strike the plastic sleeve 14 and cause the rod 12 to swing towards a scaled segment 16, the rod acting as a pointer 12a and forming with the segment a direction indicator to indicate the direction of the shot. The spike 15 is arranged to embed into a flat surface 17 which may be formed by a cork layer or bed. The rod, preferably over the region covered by the plastics sleeve 14, may strike a cushion of sand 17a in a fabric bag or some other comparable layer or bed to absorb the force of impact. A rod 12 of say  $\frac{1}{4}$ " diameter may be used. The plastics sleeve 14 may be loosely arranged on the rod and will take the impact of the club face and indicate a true shot or a pull or a slice. Due to the loose arrangement it will also indicate a shot where the club face has been drawn across it, either from in-to-out or out-to-in. The indicator segment 16 will indicate the 'drift' from the straight either to the right or the left. The sleeve may be slightly lubricated to allow it to move freely when struck and react easily to a sliced or pulled shot.

On the base of the apparatus is a red-painted three headed indicator 18 which will, when lined-up with the hole on the putting green, give the player a line, for when he takes up his stance. This indicator may comprise or be in the form of a magnet which will retain the direction rod at zero position.

The spike 15 may be lined up with a mark on that part of the base which supports the bag of sand. This mark should be exactly behind the centre of the segment 16, in line with the imaginary line to the hole.

To simulate fairway, rough surface and sand bunker, a tray is placed under the ball. This contains imitation grass 1" high for fairway Fig. 3, 2" high to 3" high for rough surface (Fig. 3a) and sand 2" deep for bunker play (Fig. 3b). The trays may be arranged to fit onto a peg or pegs, e.g., at the end nearest the direction indicator, to ensure that they do not move during use.

The ball-carrying rod 2 will be set-up on a support 19 to give the height for teeing, fairway, rough and bunker play. The ball carrying rod 2 is moved down onto this support before each shot.

After the ball has been struck the information must be transferred to the playing surface provided by the chart 19a, Fig. 4. This playing surface is a chart of an actual or imaginary golf course, to scale. The scale is for example 25 yards to the inch, and the course is shown on a continuous roll 20 of hard-wearing material such as polythene which is rolled across a flat surface made of metal. The rolling is done from a draw-off roller to a take-up roller by a simple mechanism consisting of a handle 21 at one end of the flat surface which makes the chart move across the surface.

Before play begins and during play, direction must be indicated by using the transparent direction indicator 22, (see Fig. 6). This is laid down on the course with the point at the position where the imaginary ball is supposed to be lying before each stroke.

The information from the base is transferred to the playing surface by means of a metal marker 23, Fig. 8 e.g., in the form of an arrow, which is used to pin-point where the ball lands. The arrow must be magnetised to enable it to stay on the flat surface of the chart.

To illustrate all possible hazards I refer to Fig. 7 which is a plan of part of an imaginary course.

Each stroke is played as in an ordinary game of golf and the result is read off and transferred to the plan of the course. If the ball lands on the fairway F the next stroke can be played with any club. If it lands in a light shaded area S1 within a dotted line, it has landed in an "uphill lie" and is played with an iron club of the number within the area or an iron of a high number for lifting the ball clear. If it lands in a bunker B it is played with a sand wedge, without grounding the club, using the "sand tray". If it lands in a dark shaded area S2, it must be played to the left or the right, as this dark area indicates an overhang which prevents forward play. (This play must be with a club as indicated in the adjacent light shaded area, or it must be bunker play, if appropriate). If it lands on a hillock H, this is indicated by a circle, criss-crossed by dark lines. If it lands on top it can remain where it has landed, but if on the side it must be placed at the foot of the hillock, following the nearest line down. If it lands in the rough, it must be played out of the rough by using the "rough tray". If it lands "out of bounds" (off the plan altogether) penalty is 1 stroke and a line-up from where it went out of bounds. Landing in woods entails a penalty

70

75

80

85

90

95

100

105

110

115

120

125

130

5 of 2 strokes and in a lake 2 strokes. When the player reaches the green, the distance is measured by using the transparent direction indicator, and a real ball is placed on the green and played into the hole. Indoors the carpet is used. If played indoors the sand tray is not used. The ball is played from the rough tray without grounding the club.

10 The game can be played by the normal number of players as in a match at a Golf Club, using differently numbered magnetic arrows.

15 In the modified arrangement shown in Figs. 9 to 14, like parts to those shown in Figs. 1 and 2 are marked with the same reference numerals. However in this arrangement the dial 11a and the pointer 9a for recording distance are arranged on the base B adjacent the direction indicator 12a, 16a 20 and the pointer 9a is carried by a shaft 20a to which one end of a cord 10a is anchored, the other end of the cord being attached to the bottom of the flap at 10b (Fig. 11). The angular displacement of the flap pulls 25 the cord around a guide groove 24 in the base B and angularly displaces the pointer. The groove may be lubricated, e.g., with graphite, to promote smooth displacement of the cord in the groove. The groove is shown 30 in the underside of the base and it may be covered by a piece of hardwearing waterproof material.

35 The direction indicator rod 12a may co-operate with a fixed stop 25 (which may be a magnet) for location in the neutral position before displacement of the club head and this stop may be grooved to accommodate the rod. The plastics sleeve 14a is displaceable along the rod 12a. The rod may rest in a shallow groove 26 in the top of the support 40 27 and the sleeve rest on the apex of the support. The eye 28 of the rod loosely surrounds the axle 13a. The sleeve 14a may be lubricated.

45 The flap 4 is in this embodiment hinged at 6a (Figs 10 and 11) to a frame 5a surrounding the flap.

50 A rod 29 carries at one end rollers 30 pressing and ridable on the back of the flap 4, the other end of the rod being anchored to a bearing disc 31 to which torsion springs 7a are anchored and which are anchored at the remote ends to the caps 32.

55 The bearing disc 31 is provided with circumferential screw holes 31a. With the end of a tool engageable with any one of the holes, the bearing disc can be rotated and the springs torsioned to a predetermined degree and the rod then engaged with one of these holes so that the springs press the wheels 30 against the back of the flap. When the flap is turned the wheels rotate and may roll on the flap, e.g., on a plastics bearing strip thereon.

65 The tension of the spring or springs can be

adjusted during manufacture to give the correct reading on the distance indicator for a known force exerted by the captive ball on the flap at the spot where the captive ball will be driven against the flap when struck by a No. 1 wood. The other clubs will then automatically indicate distance depending on their loft, e.g., the ball struck by the No. 8 iron with the same force will strike the flap halfway between the pivot and the point where the ball driven by the No. 1 wood would be struck to show a distance one-half of that of the No. 1 wood.

70 The pivot of the rod 2 carrying the ball is shown in Fig. 12 and comprises an eyelet 33 of the rod loosely surrounding the stem 34 which is heated at 35. This eyelet and the eyelet 28 of the rod 12a may be lubricated. The rod 2 is located by a shallow groove 36 in the support 19b so that it can be forced laterally of the groove with little or no resistance.

75 The eyelet 33 allows the ball and rod to turn and the ball to strike the flap in the relevant impact area. It must be large enough to enable the ball to rise and turn up to a maximum height before striking the flap after being struck by say a No. 9 iron, the highest loft club. The head 35 aforesaid may be provided by a bolt which is fixed during manufacture after tests have shown the correct height for the head.

80 The rod 12a is provided with a flight 37. Play may be with four inexpensive clubs, e.g., a No. 1 wood, No. 2 iron, No. 8 iron and a putter by anyone who wishes to play but does not possess a conventional set of golf clubs.

#### WHAT I CLAIM IS:—

1. Apparatus for practising or simulating the game of golf comprising a captive ball mounted for limited movement in flight when driven by a club, means displaceable by the impact of the driven ball thereagainst to an extent dependent upon the force of impact of the ball thereon, and upon the location of impact determined by the flight of the ball, means responsive to such displacement to indicate the distance the ball, if free, would have travelled and a member which is displaceably mounted so that, upon impact by a club in its follow through, it is moved to take up a direction in which the ball, if free, would have travelled.

105 2. Apparatus according to claim 1, in which said member co-operates with a dial, scale or the like to indicate the direction in which the ball, if free, would have travelled

110 3. Apparatus according to claim 1 or 2, in which the first said means comprises a pivoted flap normally biased to return to a given position and adapted to be displaced about its pivot by the impact thereon of the driven ball.

70

75

80

85

90

95

100

105

110

115

120

125

4. Apparatus according to claim 3 comprising a dial or scaled segment and a pointer co-operative therewith and displaceable by the pivotal movement of the said flap to indicate the distance the ball would have travelled, if unrestrained, when driven by the club. 5

5. Apparatus according to claim 3 or 4, in which the flap is suspended from a top horizontal hinge axis and is loaded by a spring means which normally retain the flap up to a fixed stop. 10

6. Apparatus according to claim 4 or claim 5 as appendant to claim 4, in which the pointer is displaceable by a cord or other flexible tension member in response to the angular displacement of the flap. 15

7. Apparatus according to any preceding claim, in which the ball is carried by the end of a rod which is so pivoted that it can be swung laterally of the line of play and rise at the ball end to conform to the flight of the ball. 20

8. Apparatus according to claim 7 in which the pivot point of the rod and/or a support upon which the rod can rest near the pivot, is or are adjustable. 25

9. Apparatus according to any preceding claim in which the means responsive to the follow-through of the club head is in the form of a rod which is so pivoted that it can move from side to side in response to and conform to the direction of impact of the club on the rod. 30

10. Apparatus according to claim 9 in which the rod is clothed at least where it is contacted by the club head with a sleeve of resilient material. 35

11. Apparatus according to claim 9 or 10, in which the rod acts as a pointer and is co-operative with a fixed scaled segment for indicating the direction of ball travel had the ball been unrestrained. 40

12. Apparatus according to claim 11, having means, e.g., a spike on the rod co-operating with a fixed penetrable medium, for 45

bringing the rod to rest in an indicating position. 13. Apparatus according to claim 11 or 12, having a cushion of discrete material arranged to be contacted by the rod when driven to indicating position. 50

14. Apparatus according to any preceding claim, in combination with a chart of a golf course upon which the position the ball would have reached if unrestrained can be noted. 55

15. Apparatus according to any preceding claim in combination with trays of material which can be placed under the captive ball prior to its being driven, artificial long or short grass, sand or other material being contained in each tray so that a condition simulating the condition of the course at the point where the ball is to be driven, can be simulated. 60

16. Apparatus according to claim 14 or 15 as appendant to claim 14, in combination with a transparent plotter marked in angles and distances to permit the direction and distance indicated by the respective indicating means to be plotted in relation to the chart of the course. 65

17. Apparatus according to claim 14 or either of claims 15 or 16 as appendant thereto in combination with a holder member which can be located on a lawn or on a carpet or interior surface to simulate a putting green and on which a separate ball can be holed out when the position the ball would have occupied on the course, and as plotted on the chart, is within putting range. 70

18. Apparatus for practising, or simulating the game of golf, substantially, as herein described with reference to the accompanying drawings. 75

80

85

HYDE, HEIDE & O'DONNELL,  
47, Victoria Street,  
London, E.C.2.  
Chartered Patent Agents,  
Agents for the Applicants.

Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1972.  
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from  
which copies may be obtained.

1295644

COMPLETE SPECIFICATION

5 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale

Sheet 1

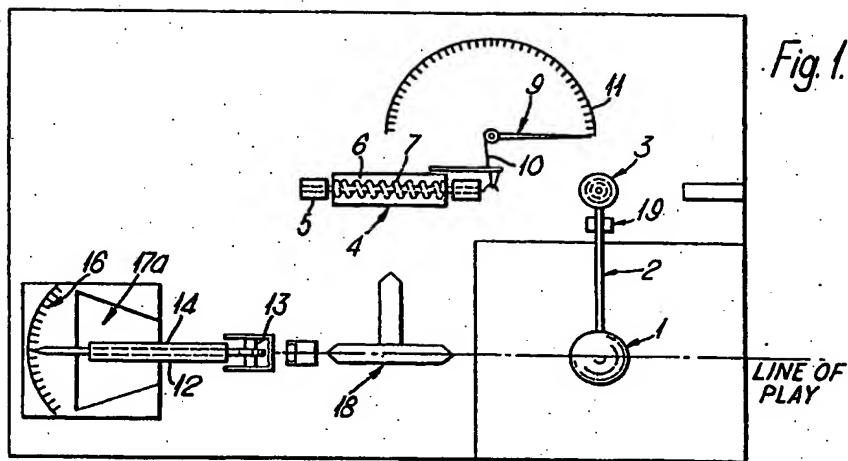


Fig. 1.

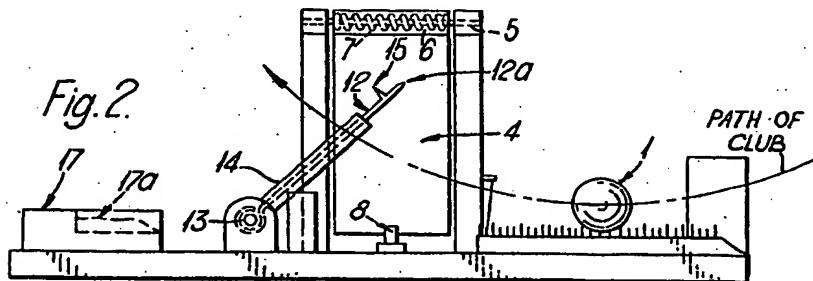


Fig. 2.



Fig. 3.

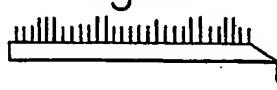


Fig. 3a.



Fig. 3b.

1295644

COMPLETE SPECIFICATION

5 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale*

Sheet 2

Fig. 4.

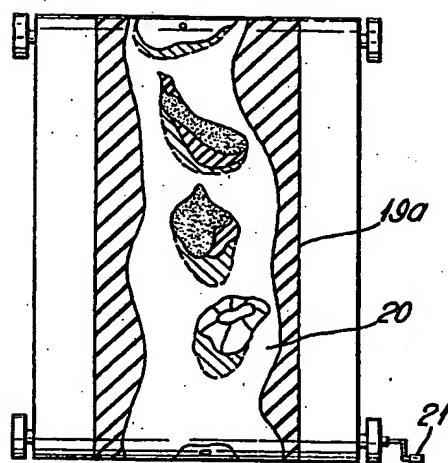
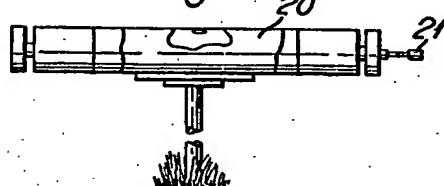


Fig. 5.



1295644

COMPLETE SPECIFICATION

5 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale

Sheet 3

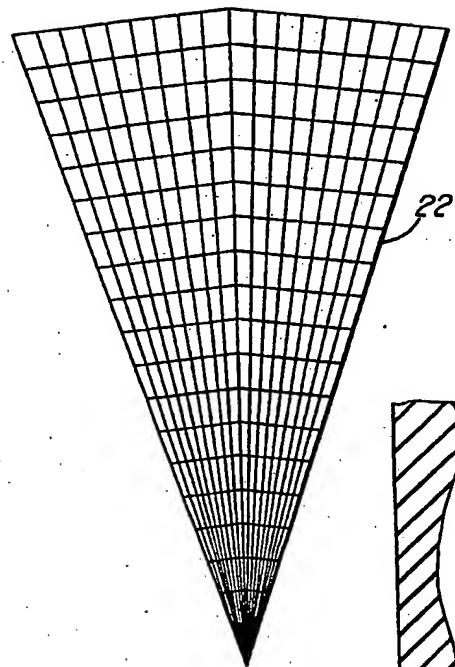


Fig. 6.

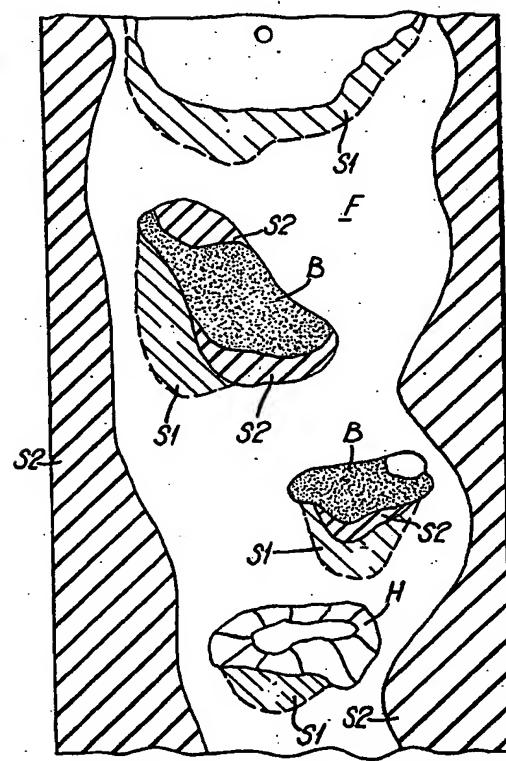


Fig. 7.



Fig. 8.

1295644

COMPLETE SPECIFICATION

5 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale*

Sheet 4

Fig. 9.

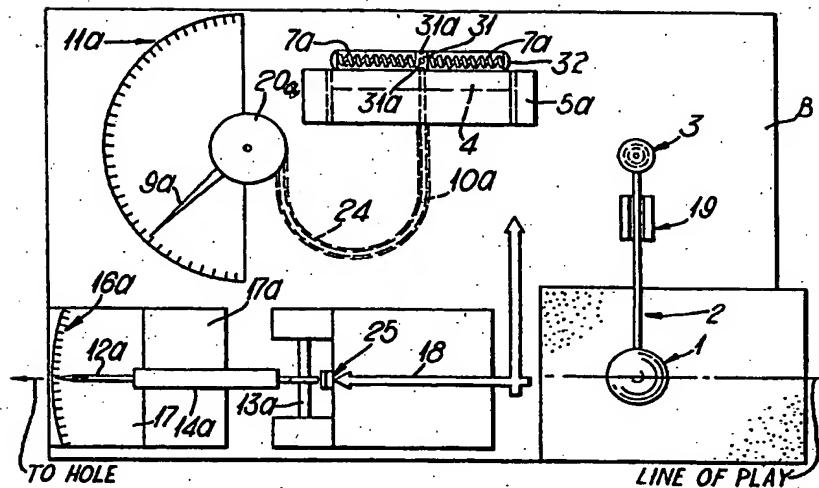
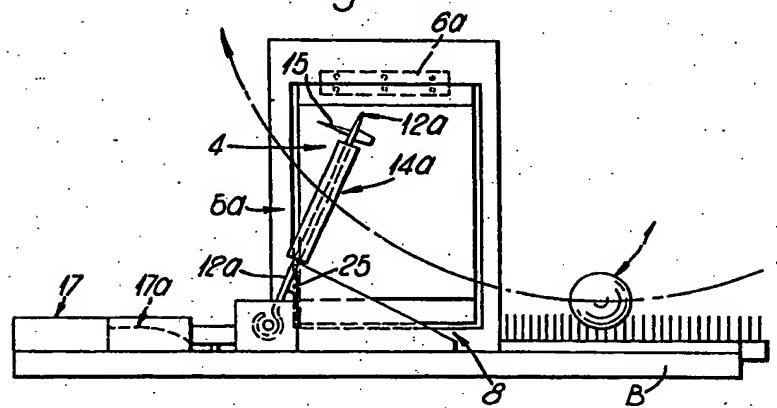


Fig. 10.



1295644

5 SHEETS

COMPLETE SPECIFICATION

This drawing is a reproduction of  
the Original on a reduced scale

Sheet 5

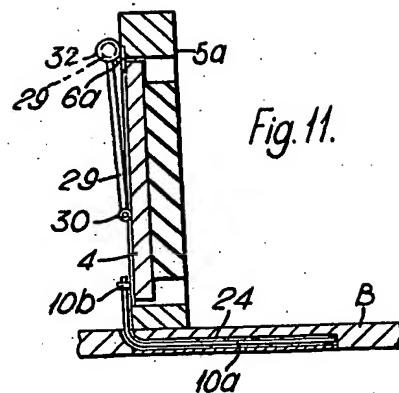


Fig. 11.

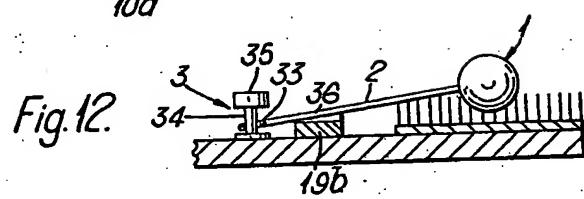


Fig. 12.

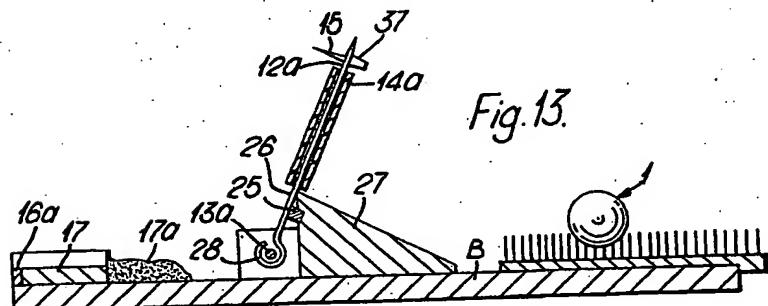


Fig. 13.

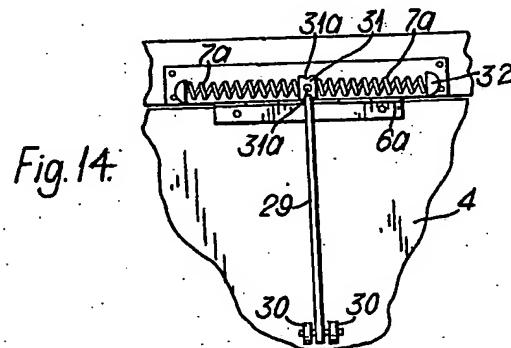


Fig. 14.